CLAIMS

What is claimed is

1. A circuit for providing a regulated voltage comprising:

an upper transistor connected to an input voltage from a voltage source, the upper transistor having a control terminal;

a lower transistor connected to the upper transistor , the lower transistor having a control terminal;

a voltage regulator connected to receive the regulated voltage, the voltage regulator operable to generate a first control signal applied to the control terminal of the upper transistor, and further operable to generate a second control signal applied to the control terminal of the lower transistor;

and

a voltage protection circuit comprising:

an over-voltage detector circuit powered by the regulated voltage operable to detect an over-voltage condition and further operable to generate an over-voltage detected signal, wherein the over-voltage detected signal causes the lower transistor to draw sufficient current from the voltage source such that the over-voltage condition is abated.

2. The circuit of claim 1 wherein:

the over-voltage detector circuit is powered solely by the regulated voltage.

3. The circuit of claim 1 wherein:

the voltage regulator comprises a linear regulator

4. The circuit of claim 1 wherein:

the voltage regulator comprises a switching regulator.

5. The circuit of claim 4 wherein:

the switching regulator comprises a pulse width modulator.

6. The circuit of claim 1 wherein:

the voltage protection circuit is operable to generate a clamp signal in response to the over-voltage detected signal, wherein the clamp signal is supplied to the control terminal of the lower transistor and wherein the clamp signal causes the lower transistor to draw sufficient current from the input voltage source such that the over-voltage condition is abated.

7. The circuit of claim 1 wherein:

the over-voltage condition is abated by causing the voltage source to shut down.

8. The circuit of claim 1 wherein:

the over-voltage condition is abated by shunting the regulated voltage.

9. A circuit for protecting against over-voltage comprising:

an over-voltage detector powered by a regulated voltage operable to generate an over-voltage detected signal;

an amplifier powered by the regulated voltage operable to generate a trigger signal in response to the over-voltage detected signal; and

a thyristor adapted to clamp the regulated voltage in response to the trigger signal.

10. The circuit of claim 9 wherein:

the over-voltage detector is a self-regulating bandgap detector.

11. The circuit of claim 10 wherein:

the thyristor comprises a silicon controlled rectifier.

12. A method for providing a regulated voltage comprising:

providing an upper transistor connected to an input voltage from a voltage source, the upper transistor having a control terminal;

providing a lower transistor connected to the upper transistor , the lower transistor having a control terminal;

providing a voltage regulator connected to receive the regulated voltage, the voltage regulator operable to generate a first control signal applied to the control terminal of the upper transistor, and further operable to generate a second control signal applied to the control terminal of the lower transistor;

and

providing a voltage protection circuit comprising:

an over-voltage detector circuit powered by the regulated voltage operable to detect an over-voltage condition and further operable to generate an over-voltage detected signal, wherein the over-voltage detected signal causes the lower transistor to draw sufficient current from the voltage source such that the over-voltage condition is abated.

13. The method of claim 12 wherein:

the voltage regulator comprises a pulse width modulator.

14. A method for protecting against over-voltage conditions comprising:

providing an over-voltage detector powered by a regulated voltage operable to generate an over-voltage detected signal;

providing an amplifier powered by the regulated voltage operable to generate a trigger signal in response to the over-voltage detected signal; and

providing a thyristor operable to clamp the regulated voltage in response to the trigger signal.

15. The method of claim 14 wherein:

the thyristor is a silicon-controlled rectifier.